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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _07 January 2008_.
2a)☐ This action is FINAL.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
     closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-29_ is/are pending in the application.
     4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1-29_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on _7/2/03_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
     a)☐ All b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
            application from the International Bureau (PCT Rule 17.2(a)).
     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   Paper No(s)/Mail Date. _____.
3)☐ Information Disclosure Statement(s) (PTO/SB/08)   5)☐ Notice of Informal Patent Application
     Paper No(s)/Mail Date _____.   6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see applicant's remarks, filed on January 7, 2008, with

respect to the rejection(s) of claim(s) 1-29 under 35 U.S.C 102 (b) as being anticipated

by Tiedemann et al. have been fully considered and are persuasive. Therefore, the

rejection has been withdrawn. However, upon further consideration, a new ground(s) of

rejection is made in view of Hill et al. (Hill), U.S. Patent No. 6,775,256.

2.   Hill discloses a packet scheduler for Code Division Multiple Access cellular

mobile communication system for scheduling transmissions of packets in order to

maximize the capacity of the system. A candidate set of packets are selected and

continues through an iteration process for determining a final candidate set based on

calculated transmit power requirements. See Abstract, Col. 5, lines 43-47 and Col. 6,

lines 10-41. Hill fails to specifically mention channelization codes throughout the body

of the detailed description of inventor's preferred embodiment (Cols. 3-7), however, Hill

does disclose in detail CDMA communication systems. According to Col. 1, line 57-Col.

2, line 15 and Col. 2, lines 34-54, in a CDMA system, codes are allocated to remote

terminals to minimize the interference caused between remote terminals. Hill further

mentions the importance for optimal utilization of resources to schedule the order and

time for transmission of the individual packets. Most packet based systems contain

schedulers which control when the individual data packets are transmitted and therefore

share the available resource (for example, power and codes in a CDMA system). Hill' s

invention covers the need for a scheduler to optimize for CDMA systems where codes

and power must be shared.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a
> foreign country or in public use or on sale in this country, more than one year
> prior to the date of application for patent in the United States.

4.   Claims 1-4, 611, 14, 16-17, 21-24, 26, 28 and 29 are rejected under 35

U.S.C. 102(b) as being anticipated by Hill et al. (Hill), U.S. Patent No. 6,775,256.

Regarding Claims 1, 10, 16 and 28, Hill discloses a method of communication,

comprising: assigning at least one channelization code to each of a plurality of data

packets available for a current transmission; and allocating available transmission

power to the channelization codes based on a plurality of channel quality metrics, at

least a subset of the channelization codes being assigned respective portions of the

available power, wherein: the assigning and allocating further comprise evaluating a

number representing how many channelization codes are to be assigned to each of the

packets and evaluating the portion of the allocated transmission power to be assigned

to each data packet using an iterative procedure that adjusts the values for the portions

of the allocated transmission power and the number of channelization codes for at

least one iteration responsive to the channel quality metrics and the values for the

portions of the allocated transmission power and the number of channelization codes

determined during at least one prior iteration to optimize a capacity of a channel for communicating the data packets during the current transmission. **(The scheduler 231 selects a candidate set of packets. The transmit powers required to transmit the packets is calculated based on the packets in the candidate set. Based on the calculation of the transmit powers, the candidate set is modified. If it has not been determined that a final candidate set has been determined then a new calculation of transmit powers is performed based on the modified candidate set. This iteration continues until a final candidate set has been determined; Col. 4, lines 46-57; Col. 5, lines 43-47 and Col. 6, lines 1-55)**

Regarding Claims 2, 17 and 18, Hill discloses further comprising: determining the portions of the available power to be assigned based on the channel quality metrics and a first optimization parameter; determining the values of the number of channelization codes assigned to the data packets based on the determined portions of the available power and a second optimization parameter; and repeating over a plurality of iterations the determining of the portions of the available power and the determining of the values of the number of channelization codes. **(Col. 6, lines 1-26)**

Regarding Claims 3 and 29, Hill discloses further comprising: determining the number of channelization codes assigned to each data packet based on a size of the data packet and one of the channel quality estimates associated with the data packet; determining the portions of the available power to be assigned to each of the channelization codes based on a first optimization parameter; and repeating over a

plurality of iterations the determining of the number of channelization codes and the

determining of the portions of the available power. **(Col. 6, lines 1-26)**

 Regarding Claims 4 and 19, Hill discloses further comprising: terminating the

repeating responsive to the assigned channelization codes in a first iteration being the

same as the assigned channelization codes in a second later iteration; and truncating

the subset of assigned channelization codes based on a maximum number of

allowable channelization codes. **(Col. 6, lines 27-55)**

 Regarding Claims 6 and 21, Hill discloses further comprising prioritizing the

plurality of data packets. **(Col. 5, lines 1-16)**

 Regarding Claims 7 and 22, Hill discloses wherein prioritizing the plurality of

data packets further comprises: identifying a plurality of quality of service classes;

assigning a predetermined amount of the available power to each of the quality of

service classes; and assigning the channelization codes and the portions of the

available power based on the predetermined amounts for each quality of service

classes. **(The candidate set selection is based upon the size of queued packets,**

Quality of Service information and priority; Col. 5, lines 1-16)

 Regarding Claims 8 and 23, Hill discloses wherein prioritizing the plurality of

data packets further comprises: identifying a plurality of quality of service classes;

assigning the channelization codes and the portions of the available power for a first

class of the quality of service classes; determining a remaining amount of the available

power after the assigning for the first class; and assigning the channelization codes

and the portions of the available power for a second class of the quality of service

classes based on the remaining amount of available power. **(A candidate set is continuously modified through iteration until a final candidate set is identified. During the modification, packets may be added and/or removed, therefore a new set is constantly being identified based on new calculations reflecting the modifications. Also see rejection for Claims 7 and 22)**

   Regarding Claims 9 and 24, Hill discloses wherein prioritizing the plurality of data packets further comprises: identifying a plurality of quality of service classes; combining all data packets in the plurality of quality of service classes; sorting the combined users based on a fairness algorithm; and assigning the channelization codes and the portions of the available power based on the sorting. **(See rejections for Claims 7, 22, 8 and 23)**

   Regarding Claim 11, Hill discloses further comprising initiating a communication link over a channel, the communication link being assigned to a quality of service class having a predetermined transmit power assignment and the power fraction is based on a portion of the predetermined transmit power. **(Col. 5, lines 1-16)**

   Regarding Claims 14 and 26, Hill discloses wherein the first constraint and first optimization parameter are associated with the power available for communicating, and the channelization codes and power fractions associated with the signal are assigned by determining the portions of the available power to be assigned based on the first optimization parameter. **(Col. 6, lines 1-41)**

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed
> or described as set forth in section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are such that the subject
> matter as a whole would have been obvious at the time the invention was made
> to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

3.   Claims 5, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Hill in view of Gollamudi et al. (Gollamudi), U.S. Publication No. 2003/0123477.

4.   **Regarding Claims 5, 12 and 20, Hill discloses** the method and system wherein

the channelization codes and the power fractions associated with the signal are

assigned based on the channel quality estimate to optimize a channel as described

above.

5.   Hill fails to disclose wherein optimizing the capacity further comprises optimizing

a Shannon capacity of the channel for communicating the data packets.

6.   In a similar field of endeavor, Gollamudi discloses an adaptive quality control

loop for link rate adaptation in data packet communications. Gollamudi further discloses

wherein optimizing the capacity further comprises optimizing a Shannon capacity of the

channel for communicating the data packets. **[0003]-[0005]**

7.   At the time of the invention, it would have been obvious to a person of ordinary

skill in the art to estimate channel conditions using a channel quality metric (Gollamudi)

for maximizing the capacity of the system (Hill).

6.   Claims 13, 15, 25 and 27 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hill in view of Tiedemann, Jr. et al. (Tiedemann), U.S. Publication No.

2002/00304170..

   Regarding Claims 13, 15, 25 and 27, Hill discloses the method and system

wherein the channelization codes and power fractions associated with the signal are

assigned by at least one of the channelization codes and the portions of power

available for communicating based on the first optimization parameter as described

above.

   Hill fails to disclose further comprising: generating a cost function using a

channel capacity equation having a first constraint, the cost function including a first

optimization parameter associated with the first constraint; and determining a value for

the first optimization parameter based on a first order derivative of the cost function.

   In a similar field of endeavor, Tiedemann discloses a method and apparatus for

maximizing the use of available capacity in a communication system. Tiedemann

further discloses further comprising: generating a cost function using a channel

capacity equation having a first constraint, the cost function including a first

optimization parameter associated with the first constraint; and determining a value for

the first optimization parameter based on a first order derivative of the cost function.

According to Tiedemann **[0005]-[0007]** cost is associated with each classification: CBR

being the most expensive, VBR the next expensive and ABR the least expensive.

Based on this priority list the portions of available power are assigned accordingly.

At the time of the invention, it would have been obvious to a person of ordinary

skill in the art to determine the amount of power required for transmitting each code

channel based upon priority so as to not exceed the total amount of power that the

amplifier can provide without undesirable distortion **[Tiedemann-0007]**.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Lundby et al., U.S. Patent No. 7,068,683 discloses a method and apparatus for

high rate packet data and low delay data transmissions.

Hsu, U.S. Publication No. 2004/0090938 discloses a method of optimizing

radiation pattern of smart antenna.

Ketchum, U.S. Patent No. 6,731,668 discloses a method and system for

increased bandwidth efficiency multiple input-multiple output channels.

Bombay et al., U.S. Patent No. 6,999,517 discloses a method and apparatus for

transmission of data on multiple propagation modes with far-end cross-talk

cancellation.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Shantell Heiber whose telephone number is (571)272-

0886. The examiner can normally be reached on Monday-Friday 9:00am-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. H./
Examiner, Art Unit 2617
April 2, 2008

/Lester Kincaid/
Supervisory Patent Examiner, Art Unit 2617